INSECTS OF MICRONESIA
Coleoptera: Bostrychidae[1]

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I have had the opportunity to examine many examples of the Micronesian bostrychid beetles through the courtesy of Dr. J. L. Gressitt. Of the 10 species in the collection, half were hitherto unrecorded from Micronesia, but many of the records of the other five in this paper are also new.

I wish to express my sincere thanks to Dr. Gressitt and authorities of Bernice P. Bishop Museum. I am also much indebted to Dr. W. W. Boyle, Mr. E. H. Bryan, Jr., and Miss Margaret Titcomb of Honolulu, Dr. S. von Breuning of Paris, Mr. H. Last of England, Mr. S. Kimoto, Mr. M. Miyatake, and Mr. R. Ohgushi of Japan, and Dr. J. M. Vrydagh of Brussells for assistance with various problems in the course of this study. The United States Office of Naval Research, the Pacific Science Board (National Research Council), the National Science Foundation, and Bishop Museum have made the survey and publication of the results possible. Field research was aided by a contract between the Office of Naval Research, Department of the Navy, and the National Academy of Science, NR 160-175.

Most of the 10 species of bostrychid beetles in this paper are widely distributed in the tropical and subtropical regions of the world. Some of them are also in the temperate regions. There is no species endemic in Micronesia so far as known.

The expansion of range in the Bostrychidae is often caused by commerce. For example: *Rhizopertha dominica* (Fabricius) was transported to many regions of the world in grain; *Dinoderus* (*Dinoderus*) *minutus* (Fabricius) was carried from tropical regions to many temperate regions in bamboo wares; and many other species were carried to tropical and subtropical regions with timber or wood products. Four examples of *Rhizopertha dominica* (Fabricius) in this paper were collected in chicken feed at Koror Island and this may be an indication of the participation of human beings in the expansion of range.

According to this study, Bostrychidae are fairly abundant in the southern Marianas and also rather rich in the Palaus, but are less frequent in Bonin,

[1] This represents, in part, Results of Professor T. Esaki's Micronesian Expeditions (1936-1940), No. 93.

Yap, Ponape, Truk, Kusaie, and Wake. There has been no representative as yet discovered in the northern Mariana Islands, Caroline Atolls, or the Marshall and Gilbert Islands, and it is questionable whether these islands have any beetles of this family. So far as the present material is concerned, *Rhizopertha dominica* (Fabricius), *Dinoderus* (*Dinoderus*) *minutus* (Fabricius), *Xylothrips flavipes* (Illiger), *Xylothrips religiosus* (Boisduval) and *Xylopsocus capucinus* (Fabricius) flourish in Micronesia, but the other species are apparently not abundant.

Distributional List of Micronesian Bostrychidae

	Micronesian Island Groups									
				Caroline						
	Bonin	Volcano	S. Marianas	Palau	Yap	Truk	Ponape	Kusaie	Wake	Other Localities
Dinoderinae										
1. Rhizopertha dominica			×	×	×					Cosmopolitan
2. Dinoderus bifoveolatus			×							Tropical regions, partly temperate regions
3. D. minutus			×	×			×			Tropical regions, partly temperate regions
Bostrychinae										
4. Heterobostrychus aequalis			×							Oriental Region, Madagascar
5. H. hamatipennis	×									Oriental Region, Japan, Madagascar
6. Amphicerus cornutus									×	Tropical America, Hawaiian Is.
7. Xylothrips flavipes			×	×	×					Oriental Region, Madagascar
8. X. religiosus						×	×	×		Oceania and Australian Region
9. Xylopsocus capucinus			×	×						Ethiopian, Neotropical, Australian Regions and Oceania
10. X. castanopterus	×	×								Ethiopian, Oriental, and Australian Regions

Key to Micronesian Subfamilies of Bostrychidae

1. Vertex smooth or finely punctured; pronotum arched forward at front border which is furnished with many denticular or thorn-like projections; procoxae transverse and slightly produced; tarsus distinctly shorter than corresponding tibia, with second segment slightly longer than, or nearly equal to, third, and fifth longer than, or nearly equal to, four preceding segments combined .... **Dinoderinae**
2. Vertex closely clothed with fine granules or short longitudinal ridges; pronotum straight or arched inward at front border, without any protuberance except a large projection at front corners; procoxae globular or conical, strongly produced; tarsus longer than, or nearly equal to, corresponding tibia, with second segment longer than third and fifth distinctly shorter than four preceding segments combined........ **Bostrychinae**

Subfamily DINODERINAE

Body elongate-cylindrical, parallel- or subparallel-sided. Head invisible from above; vertex impunctate or finely punctured. Pronotum arched forward at front border, comparatively lightly convex on dorsum which has semicircular rows of denticles on anterior half (anteriormost of denticle rows more developed than posterior or inner ones); posterior half closely clothed with punctures or granules and in some cases with many granular or denticular projections on lateral borders.

Key to Micronesian Genera of Dinoderinae

1. Frons recognizable and much shorter than clypeus; antenna with second segment nearly equal to first; pronotum closely clothed with depressed granules on posterior half; last visible abdominal sternite transversely truncate at apex .... **Rhizopertha**

   Frons not distinctly limited from before and behind; antenna with second segment much shorter than first; pronotum closely punctured on posterior half; last visible abdominal sternite deeply emarginate at apex........ **Dinoderus**

Genus **Rhizopertha** Stephens

Rhizopertha Stephens, 1830, Illustr. Brit. Ent., Mandib. **3**: 354.—Lesne, 1938, Coleopt. Cat. **161**: 18. Genotype: *Synodendron dominicum* Fabricius, 1792, Ent. Syst. **1** (2): 359 (South America).

Frons distinctly recognizable, much shorter than clypeus; mandibles triangular, crossing each other when closed. Antenna 10-segmented, with second segment equal to third, and three terminal segments thickened and strongly expanded inward. Pronotum about as wide as long, gently narrowed anteriorly from a little beyond base, arched forward at front border, distinctly ridged at posterior half of lateral borders; anterior half with several semicircular rows (arranged like concentric circles) of denticular projections (outermost row stronger than inner), but posterior half closely furnished with blunt tuberosities. Elytra narrowly elongate, parallel-sided, rounded at apex.

Cosmopolitan.

1. **Rhizopertha dominica** (Fabricius).

Synodendron dominicum Fabricius, 1792, Ent. Syst. **1** (2): 359.

Synodendron pusillum Fabricius, 1798, Ent. Syst., Suppl., 156 (East Indies).

Ptinus fissicornis Marsham, 1802, Ent. Britannica **1**: 82 (no locality given).

Ptinus piceus Marsham, 1802, Ent. Britannica **1**: 88 (East Indies).

Apate rufa Hope, 1845, Ent. Soc. London, Trans. **4**: 16 (Chusan, China).

Apate frumentaria Nördlinger, 1855, Kleinen Feinde Landwirthschaft **1**: 238, figure (from Lorraine, also in large numbers in wheat from Egypt and America).

Bostrichus moderata Walker, 1859, Ann. Mag. Nat. Hist. III, **3**: 260 (Ceylon).

Bostrichus exiguus Walker, 1859, Ann. Mag. Nat. Hist. III, **3**: 260 (Ceylon).

Rhizopertha dominica, Lesne, 1898, Soc. Ent. France, Ann. **66**: 332, figs. 13, 21, 27b; 1938, Coleopt. Cat. **161**: 18-19.

Body elongate-cylindrical, somewhat depressed dorsoventrally. Coloration deep or dark red brown; underside lighter than dorsum in general, but anterior half of metasternum blackish brown in some cases.

Head invisible from above, impunctate and smooth, with exception of frons and clypeus which are finely but sparsely punctulate; frons separated from vertex by broad transverse depression and delimited from clypeus by transverse suture; clypeus longer than frons, feebly emarginate at front border; labrum very thickly clothed with long golden setae. Antenna 10-segmented; second segment equal to third; three terminal segments strongly dilated inward. Pronotum nearly as broad as long, somewhat narrowed in front; front border gently arched forward, front and basal corners broadly rounded, lateral borders with sharp ridge at posterior half; dorsum gently convex, furnished with some semicircular rows (arranged like concentric circles) of denticles (foremost row largest) on anterior half, closely and conspicuously clothed with many tuberosities (not sharp but depressed at tips) on basal half. Scutellum minute, subquadrate, slightly widened posteriorly, dorsum gently convex, almost impunctate and smooth. Elytron narrowly elongate, parallel-sided or very slightly widened posteriorly, rounded at apical border; dorsum convex from side to side, distinctly punctate-striate and clothed with yellow-brown pubescence on side, but apical area strongly declined behind and furnished with obscure granules and yellow-brown pubescence. Underside finely punctulate and pale brown pubescent; last visible abdominal sternite truncate at apex.

Length: 2.5-3.0 mm.

DISTRIBUTION: Cosmopolitan, excluding Arctic areas; S. Mariana Is. and western Caroline Is.

S. MARIANA IS. GUAM: One, Agana, Sept. 1945, Wallace.

PALAU. KOROR: Four, from chicken feed, Dec. 1952, Beardsley.

YAP. YAP: One, Aug. 1952, Krauss.

CAROLINE ATOLLS. TOBI (Tokobei) I.: Jan. 1938, Murakami (Kyushu Univ.).

Genus **Dinoderus** Stephens

Dinoderus Stephens, 1830, Illustr. Brit. Ent., Mandib. **3**: 352.—Lesne, 1938, Coleopt. Cat. **161**: 22-23. Genotype: *Dinoderus substriatus* Stephens, 1830, Illustr. Brit. Ent., Mandib. **3**: 352 (New Forest, England; = *minuta* Fabricius, 1775).

Patea Casey, 1898, New York Ent. Soc., Jour. **6**: 66 (part).

Antenna 10- or 11-segmented, with second segment much shorter than first, and three terminal segments strongly dilated inward. Pronotum more or less narrowed in front; front border gently arched forward, four corners broadly rounded; dorsum lightly convex, anterior half with several concentric semicircular rows of denticles (outermost row stronger than inner); posterior half clothed with many punctures and lateral borders of this area distinctly ridged. Elytra about equal in width to pronotum, elongate, parallel-sided, rounded at apex.

Cosmopolitan.

Key to Micronesian Subgenera of Dinoderinae

1. First tarsal segment shorter than, or nearly equal to, second............**Dinoderus**, s. str.
 First tarsal segment much longer than second...**Dinoderastes**

Subgenus **Dinoderus** Stephens, s. str.

Key to Micronesian Species of Dinoderus, s. str.

1. Pronotum: Central two denticles along front border situated closely side by side, lateral ridges not connected to posterolateral end of outermost denticular row; body 2.25-2.5 mm., much narrower, with dorsum pubescent on marginal area, but glabrous on median area...**bifoveolatus**
 Pronotum: Central two denticles along front border widely separated, lateral ridges connected to posterolateral end of outermost denticular row; body 2.5-3.5 mm., wider, and much more robust, with dorsum not so thickly, but almost entirely, pubescent...**minutus**

2. **Dinoderus (Dinoderus) bifoveolatus** (Wollaston). (Figure 1.)

Rhizopertha bifoveolata Wollaston, 1858, Ann. Mag. Nat. Hist. III, **2**: 409-410 (Madeira); 1865, Coleopt. Atlant., 232, Appendix, 39; 1867, Coleopt. Hesperid., 110.

Dinoderus perpunctatus Lesne, 1895, Soc. Ent. France, Ann. **64**: 170 (cosmopolitan in warm regions); 1897, Soc. Ent. France, Bull. **1897**: 147 (synonymized with *D. bifoveolatus* Wollaston).

Dinoderus bifoveolatus, Lesne, 1898, Soc. Ent. France, Ann. **66**: 323, 328; 1924, Encycl. Ent. **3**: 62, 72, 74, fig. 42 (tropical regions).

Dinoderus (*Dinoderus*) *bifoveolatus,* Lesne, 1938, Coleopt. Cat. **161**: 23.

Body cylindrical, elongate, parallel-sided. Coloration shining brownish red in two examples at hand, with mouthparts (except mandibles brownish red with apices black) and legs rather paler than other parts, and anterior area of pronotum somewhat infuscate.

Head invisible from above; occiput finely and longitudinally strigose, finely but sparingly punctulate; vertex coarsely and rather closely punctured, interspaces of punctures extremely finely shagreened; frons not distinctly delimited from vertex, but rather clearly separated from clypeus by a shallow transverse furrow, punctured and shagreened as on vertex; clypeus very short, finely but sparsely pubescent-punctate, arched posteriorly at front border; labrum large, transverse subelliptical, sparsely pubescent-punctate on marginal area, very finely and closely pubescent along anterior and lateral borders. Antenna 10-segmented; second segment much smaller than first, three terminal segments strongly dilated inward. Pronotum rather longer than wide, gently narrowed anteriorly;

all corners rounded (front corners more broadly rounded than basal ones), front border strongly arched forward and closely followed by a row consisting of many reflexed denticles (central denticles not more widely separated than others), lateral borders sharply ridged and anterior edge of each ridge not connected to denticular row along anterolateral border; dorsum strongly convex, more or less pubescent on marginal area, with a large fovea on side of middle of base; anterior half of dorsum with some semicircular rows (arranged like concentric circles) of denticles which are more weakly elevated than those on row along anterolateral border and interspaces rather sparsely punctured; posterior half of dorsum covered with large, deep punctures, somewhat rugose on interspaces. Scutellum small, transverse rectangular, rough on surface. Elytra elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side, but strongly declined behind at posterior area, strongly and rather closely punctured, punctures becoming more robust posteriorly; sparsely pubescent on posterior area. Underside sparsely punctured and pubescent; last visible abdominal sternite gently emarginate at apical border. Legs finely pubescent; first tarsal segment rather shorter than second segment.

Length: 2.25-2.50 mm.

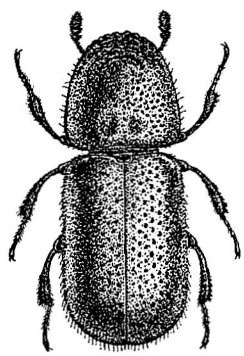


FIGURE 1.—*Dinoderus bifoveolatus.*

DISTRIBUTION: Tropical and subtropical regions of the world; frequently imported into temperate regions; Mariana Is.

S. MARIANA IS. SAIPAN: Two, ex bamboo, Oct. 1947, Lange.

3. **Dinoderus (Dinoderus) minutus** (Fabricius).

Apate minuta Fabricius, 1775, Syst. Ent., 54 (New Zealand).

Bostrichus minutus, Olivier, 1790, Encycl. Méth. **5**: 111; 1795, Entomologie **4**(77): 15, pl. 2, fig. 12.

Dinoderus substriatus Stephens, 1830 (*nec* Paykull, 1800), Illustr. Brit. Ent., Mandib. **3**: 352 (New Forest, England).

Bostrichus vertens Walker, 1859, Ann. Mag. Nat. Hist., III, **3**: 260 (Ceylon).

Rhizopertha sicula Baudi, 1873, Berliner Ent. Zeitschr. **17**: 336 (Sicily).

Dinoderus bifoveolatus Zoufal, 1894 (*nec* Wollaston, 1858), Wiener Ent. Zeitung **13**: 42 (Europe, Asia, North America).

Dinoderus minutus, Lesne, 1898, Soc. Ent. France, Ann. **66**: 323, 329, figs. 12, 17, 18, 20, 23, 24, 27 (pl. 8, fig. 15, **65,** 1896).—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26**(158): 408.—Swezey, 1942, B. P. Bishop Mus., Bull. **172**: 163 (Piti, Guam).

Dinoderus (Dinoderus) minutus, Lesne, 1914, Soc. Ent. France, Bull. **1914**: 242, 243, fig. 1.

Dinoderus japonicus, Matsumura, 1915 (*nec* Lesne, 1895), Dai Nippon Gaichu Zensho **2**: 184, pl. 28, fig. 12 (Honshu, Japan).—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26** (158): 408, 410 (synonymized with *minutus* Fabricius, 1775).

Body cylindrical, comparatively short and thick, parallel-sided. Coloration rather variable, but in many cases black or blackish brown, with face, antenna, mouthparts (with apical half of mandible black), median area of elytra and legs pale red brown or deep yellow brown.

Head invisible from above; occiput closely clothed with fine and short longitudinal furrows, finely but sparsely punctulate; vertex closely furnished with fine punctures more robust than on occiput; frons not distinctly delimited before and behind, smooth; clypeus sparsely clothed with pale yellow-brown pubescence, closely furnished with fine punctures which are finer than on occiput; labrum large, transverse fusiform, furnished with some minute punctures, very closely clothed with long golden pubescence. Antenna 10-segmented; second segment distinctly shorter than first, three terminal segments strongly dilated inward. Pronotum gently narrowed anteriorly; front corners continuously rounded together with front border, basal corners also rounded, but curvature stronger than those of front corners; dorsum strongly convex, with some concentric semicircular rows of denticles on anterior half (outermost row with much larger denticles than innermost rows and two central denticles of outermost row especially larger and more widely separated from each other), closely punctured and bifoveolate on posterior half, foveae placed transversely before middle of base and rather shallower than those of *D. bifoveolatus;* lateral borders of posterior half sharply ridged and ridges connected at anterior ends to posterior end of outermost row of denticles. Scutellum small, transverse subquadrate, with dorsum lightly convex and rough. Elytra elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side, but strongly declined behind in posterior area, strongly punctured and pubescent, pubescence on posterior area much more robust than that on anterior area. Underside closely punctured and finely pubescent; last visible abdominal sternite deeply emarginate at apex. Legs finely pubescent; tarsi with first segment distinctly smaller than second.

Length: 2.5-3.5 mm.

DISTRIBUTION: Tropical and subtropical regions; partly represented in temperate districts; Mariana and Caroline Is.

S. MARIANA IS. SAIPAN: Three, ex bamboo, Oct. 1947, Lange. GUAM: Three, ex box, Mar. 1953, Kondo; five, 1911, Fullaway; Piti one, ex bamboo screen, June 1936, Usinger; Agana, 600 yds. southwest, one, in dead flowering stalk of coconut on ground, June 1945, Dybas; Agana Airport, one, Aug. 1945, Dybas; Pt. Oca, one, 1945, Necker; Mt. Santa Rosa, one, May 1945, G. Bohart and Gressitt.

PALAU. NGAIANGL: One, Dec. 1952, Beardsley. BABELTHUAP: Ulimang, four, Dec. 1947, Dybas; three, emerging from bamboo flooring, Dec. 1947, Dybas; two, wooded peak southwest of Ulimang, Dec. 1947, Dybas; Ngiwal,

one, Oct. 1951, Gressitt; Ngarard, one, June 1953, J. C. Maguadog. KOROR: Three, flying around bamboo branch, June 1953, Beardsley.

PONAPE. Colonia, two, Mar. 1948, Dybas.

SUBFAMILY BOSTRYCHINAE

Body variable in length and thickness, but in any case cylindrical, parallel- or subparallel-sided. Head visible from above; vertex closely clothed with granules or fine longitudinal ridges. Pronotum strongly convex, with front border straight or emarginate and not denticulate, but both sides of border (front corners of pronotum) more or less produced forward, often forming horn-like and reflexed projections; anterior half (of pronotum) armed with many tubercles, but posterior half punctured and granulate or ridged in many cases, sometimes impunctate and smooth. Elytron elongate, parallel- or subparallel-sided, rounded at posterior border, distinctly convex from side to side and punctured on dorsum, declined behind in apical area and often armed with various projections on marginal border of declivity. Procoxal cavity not so different in length and width; procoxa globularly or conically prominent; tibiae shorter than, or nearly equal to, corresponding tarsi.

KEY TO MICRONESIAN GENERA OF BOSTRYCHINAE

1. Metacoxae widely separated by antromedian projection of first visible abdominal sternite 2
   Metacoxae separated by narrow keel-like sclerite arising from inner wall of first visible abdominal sternite 3
2. Three terminal segments of antenna strongly and asymmetrically expanded, each with pair of small areas of minute pubescence; pronotum with distinct depression close along front border; metatarsus nearly equal to corresponding tibia .... **Heterobostrychus**
   Three terminal segments of antenna symmetrically dilated, without areas of pubescence; pronotum not depressed along front border; metatarsus longer than corresponding tibia .... **Amphicerus**
3. Three terminal segments of antenna each longer than wide; frons closely furnished with erect setae (in female setae very much longer and much more closely set than in male); additional narrow sclerite at side of last visible abdominal sternite .... **Xylothrips**
   Antenna with ultimate segment longer than wide, but two preceding segments of ultimate one broader than long; frons without particular setae; no additional sclerite at side of last visible abdominal sternite .... **Xylopsocus**

Genus **Heterobostrychus** Lesne

Heterobostrychus Lesne, 1899, Soc. Ent. France, Ann. **67**: 443, 554.—Jacobson, 1913, Käfer Russ. **10**: 803, 805.—Chûjô, 1937, Fauna Nipponica X, **8** (7): 36, 47-48.—Lesne, 1938, Coleopt. Cat. **161**: 37. Genotype.—*Bostrichus unicornis* Waterhouse, 1879, Ann. Mag. Nat. Hist. V, **3**: 36, male (India).

Female: Antenna 10-segmented, with three terminal segments, strongly dilated. Pronotum narrowed in front with a gently curvature, not ridged throughout lateral borders, armed with large tooth-like or horn-like reflexed projection at front angles, rounded or angulate or tuberculate at basal corners; dorsum strongly convex, but anterior marginal area depressed, armed with many tubercles on anterior half (largest at

sides), and also with many punctures and scale-like protuberances or granular projections on basal half. Elytron elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side and closely foveolate-punctate, strongly declined behind at apex and generally armed with one or two peculiar projections on upper half of lateral border of this declivity.

Male: Anterior projection at front corner of pronotum and apical projections of elytra more strongly developed in general than in female.

Tropical and subtropical regions of the Old World, partly in temperate regions.

Key to Micronesian Species of Heterobostrychus

1. Body glabrous on dorsal side; pronotum clothed with many strong punctures on posterior half; scutellum impunctate and glabrous; elytron with two pairs of apical projections (upper, or inner, pair larger than lower or outer pair and turned upward when well developed) .... **aequalis**

   Body clothed with yellow or yellow-brown pubescence on dorsum; pronotum very closely armed with scale-like protuberances; scutellum uneven and pubescent on surface; elytron with only one pair of apical projections (slightly curved inward when well developed) .... **hamatipennis**

4. Heterobostrychus aequalis (Waterhouse).

Bostrichus aequalis Waterhouse, 1884, Zool. Soc. London, Proc. **1884**: 215, pl. 16, fig. 3, female (Timor).

? *Rhizopertha papuensis* MacLeay, 1886, Linn. Soc. New South Wales, Proc. II, **1**: 154, female (New Guinea).

Bostrychus uncipennis Lesne, 1895, Soc. Ent. France, Ann. **64**: 173, male (Indochina, East Indies, northern Hindustan, Andaman Is., Mariana Is., Madagascar).

Heterobostrychus aequalis, Lesne, 1899, Soc. Ent. France, Ann. **67**: 555, 557, 560, figures 29, 31, 173, 174, male, female (India, Indochina, southern China, East Indies, New Guinea, Madagascar, Comoro Is.); 1904, Mission Pavie Indo-Chine 1879-1895, **3**: 106, pl. 9, figs. 3, 3a, 3b, 4, 4a.—Stebbing, 1914, Indian Forest Insects, 148, figs. 88, 95.—Chûjô, 1937, Fauna Nipponica X, **8** (7): 48-50, 70, fig. 43.—Lesne, 1938, Coleopt. Cat. **161**: 37.—Chûjô, 1942, Mushi **14** (2): 85 (Saipan).

Body elongate, cylindrical, parallel-sided. Coloration deep brown, deep red brown or blackish brown; antenna (with three terminal segments yellow brown), mouthparts (except labrum and mandibles), femora and claws paler than other areas in general.

Head invisible from above, clothed with fine and short golden yellow pubescence; occiput closely strigose; vertex and frons finely granulate; anterior part of frons, clypeus, and labrum closely punctulate; clypeus distinctly delimited from frons, somewhat convex on surface, slightly emarginate at front border, angulate at front corners; labrum very short, closely furnished with long golden setae at front border. Antenna 10-segmented, with three terminal segments strongly dilated. Pronotum nearly parallel-sided in posterior half, but rounded and narrowed in front; front angles each with a large and reflexed tooth, front border distinctly emarginate, basal angles nearly rectangular and simply rounded or furnished with a small tubercle; dorsum strongly convex, with large depression along front border, finely punctulate and gray yellow pubescent, closely armed with many tubercles or scale-like projections (ones along lateral borders much

larger than those on inner area) on anterior half and many fovea-like punctures on posterior half. Scutellum small, subquadrate; dorsum slightly convex, impunctate, smooth, clothed with some very fine pubescence. Elytron elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side, glabrous, clothed with fovea-like punctures which are more or less arranged longitudinally, interspaces of these rows of large punctures not raised like the costae and finely but sparsely punctulate; dorsum distinctly declined behind and armed with two horn-like projections (upper one very large and curved upward below, but lower one much smaller than upper one and straight). Underside and legs finely but not closely clothed with yellow pubescence; metacoxae broadly separated by central projection of first visible abdominal sternite.

Male: Generally, pronotum very large and in some cases broader than elytra, with front corners very strongly projected, but basal corners not, or very slightly, prominent, and interspaces of large punctures on basal half of dorsum with scale-like prominences; apical projections of elytra very strongly developed. In some cases, pronotum comparatively small, as in female, with basal corners often tuberculate at tips and basal half of dorsum simply punctured (interspaces of punctures not prominent); apical projections of elytra not so strongly developed and upper projections not curved but straight.

Female: Pronotum generally very small, with basal corners tuberculate at tips and basal half of dorsum simply punctured; apical projections of elytra ill-developed like obtuse, wart-like protuberances.

Length: 6.0-13.0 mm.

DISTRIBUTION: Oriental Region, New Guinea, Madagascar, Mariana Is.

S. MARIANA IS. SAIPAN: One, Jan. 1948, Maehler; three, Nov. 1944, Edgar; three, Dec. 1944, Dybas; As Mahetog, one, at light, Jan. 1945, Dybas; Garapan I., one, 1942, Matusita. TINIAN: One, Mar. 1945, Hagen; Tinian Harbor, one, Mar. 1945, Dybas; ridge, southeast section, three, Mar. 1945, Dybas. GUAM: One, Jan. 1945, Grether, Wallace; one, in plywood from Philippines, Mar. 1954, Keck; four, Mar. 1954, Keck; Agana, one, May 1945, G. Bohart and Gressitt.

5. Heterobostrychus hamatipennis (Lesne).

Bostrychus hamatipennis Lesne, 1895, Soc. Ent. France, Ann. **64**: 173 (Indochina, China, Hindustan, Palawan, Madagascar).

Apate nipponensis Lewis, 1896, Ann. Mag. Nat. Hist. VI, **17**: 339, male (Okinawa).

Heterobostrychus hamatipennis, Lesne, 1899, Soc. Ent. France, Ann. **67**: 556, 558, 562, fig. 175; 1901, L'Abeille **30**: 94, pl. 2, fig. 39; 1904, Mission Pavie Indo-Chine 1879-1895, **3**: 105, pl. 9, figs. 1-2b.—Stebbing, 1914, Indian Forest Insects, 149.—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26** (158): 408 (Bonin Is.); 1937, Fauna Nipponica X, **8** (7): 48, 50-52, 70, figs. 1-7, 16, 27, 30, 44.—Lesne, 1938, Coleopt. Cat. **161**: 38.

Apate carinipennis Matsumura (*nec* Lewis, 1896), 1915, Konchu Bunruigaku **2**: 128, pl. 4, fig. 1.—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26** (158): 408, 410 (synonymized with *hamatipennis* Lesne).

Body cylindrically elongate, moderately thickened, parallel-sided. Coloration black or blackish brown; antenna, mouthparts (except labrum and mandibles) and claws deep red brown; sometimes femora deep red brown.

Head invisible from above, comparatively large; occiput very closely clothed with fine and short striae; vertex closely granulate and yellow pubescent, with a longitudinal smooth area in center; frons sparsely punctulate, finely and closely yellow pubescent on side, deeply and transversely depressed at middle of front border; clypeus closely punctulate, yellow pubescent on sides, with a mid-longitudinal smooth ridge, gently emarginate at front border and both ends of emargination angulate; labrum short, closely punctulate and golden yellow pubescent on surface, very thickly clothed with long golden yellow setae at front border. Antenna 10-segmented, with three terminal segments distinctly dilated inward. Pronotum nearly parallel-sided in posterior half, rounded and narrowed anteriorly in anterior half; front corners strongly produced anteriorly and armed with large reflexed projections, basal corners nearly right angles and rather sharply angulate or tuberculate; dorsum strongly convex, but transversely depressed along front border, furnished with scale-like or denticular protuberances, minute punctures and yellow-brown pubescence, protuberances on anterior half of dorsum turned backward and those situated on outer area stronger than those on inner area (of which outermost ones most strongly developed), the protuberances on posterior half of dorsum feebler than those on anterior area and directed forward, and protuberances on median area of dorsum most weakly developed. Scutellum small, subquadrate; dorsum somewhat convex, coarsely sculptured, closely clothed with fine punctures and yellow-brown pubescence. Elytron elongate, parallel-sided, rounded at posterior border, strongly convex, clothed with fovea-like punctures which have a strong tendency to form longitudinal striae, interstices of these strong punctures finely but sparsely clothed with fine punctures and gray-yellow pubescence; an oblique ridge from a little behind scutellum to near middle of basal border and also two fine ridges on outer side of oblique ridge; elytral apex strongly declined behind, with projection near middle of side. Underside and legs very thickly clothed with fine punctures and short yellow pubescence; metacoxae distinctly separated by central projection of first visible abdominal sternite; abdomen with a narrow appendicular sclerite at side of first visible sternite; tarsus (except claw segment) clothed with long setae on underside.

Male: Pronotum with front corners very strongly produced forward and basal corners not tuberculate; elytron with well-developed horn-like projection at side of apical declivity.

Female: Pronotum with front corners more weakly produced than in male and basal corners tuberculate; elytron with wart-like projection at side of apical declivity.

Some males are externally indistinguishable from females.

Length: 8.5-15.5 mm.

DISTRIBUTION: Oriental Region, Japan, Madagascar, Bonin Is.

BONIN IS. One, July 1912, Kuwana. HAHA JIMA: One, June 1949, Langford.

Genus **Amphicerus** LeConte

Amphicerus LeConte, 1861, Smithsonian Misc. Coll. **3**: 208.—G. H. Horn, 1878, Am. Philos. Soc., Proc. **17**: 541, 546.—LeConte and Horn, 1883, Smithsonian Misc. Coll. **26** (4): 228.—Casey, 1898, New York Ent. Soc., Jour. **6**: 66, 68.—Lesne, 1899, Soc. Ent. France, Ann. **67**: 502, note 1; 1938, Coleopt. Cat. **161**: 40. Genotype: *Apate punctipennis* LeConte, 1858, Acad. Nat. Sci. Philadelphia, Proc. **1858**: 73 (southwestern N. America; = *cornuta* Pallas, 1772).

Caenophrada Waterhouse, 1888, Ann. Mag. Nat. Hist. VI, **1**: 350 (part).

Schistoceros Lesne, 1899, Soc. Ent. France, Ann. **67**: 442, 502.—Schilsky, 1899, IN Küster and Kraatz, Käfer Eur. **36**: TT.—Lesne, 1901, L'Abeille **30**: 86, 92.—Reitter, 1911, Fauna Germanica **3**: 301.—Jacobson, 1913, Käfer Russ. **10**: 803, 805.—Schaufuss, 1916, Calwer's Käferbuch, ed. 6, **2**: 712.—Lesne, 1924, Encycl. Ent. **3**: 114, 131.

Antenna 10-segmented, with three terminal segments strongly dilated. Pronotum subquadrate, strongly rounded at sides, widest a little behind middle; front border gently emarginate, front corners forming distinctly reflexed horn-like projections, lateral borders not ridged, basal corners obtuse; dorsum strongly convex, more or less pubescent, covered with scale-like structure on lateral areas and also on basal half of disc, but coarsely dentate on middle of anterior half, several denticles at sides of anterior area especially strongly developed, reflexed, arranged in a longitudinal series and connected to horn-like projections of front corners with foremost denticle of this series. Elytron elongate, parallel-sided, rounded posteriorly, coarsely punctured, with exception of humerus which is free from distinct punctures and somewhat elevated, strongly declined behind apically with strong projections or obtuse elevations on upper half of lateral border.

Male: Horn-like projections at front corners of pronotum generally much stronger than those of female; elytron with two pairs of distinct projections at side of apical declivity.

Female: Body hairier than in male and often coloration of hairs deeper; elytron sometimes with one or two obtuse elevations at side of apical declivity.

Nearctic, Neotropical, and Oriental Regions; Mediterranean Subregion.

Subgenus **Amphicerus** LeConte, s. str.

6. **Amphicerus (Amphicerus) cornutus** (Pallas). (Figure 2.)

Ligniperda cornuta Pallas, 1772, Spicilegia Zool. **9**: 8, pl. 1, fig. 4, female (Jamaica and elsewhere).

Bostrichus bicornutus Latreille, 1832, Voy. Humboldt **2**: 65, pl. 34, fig. 6, male (America equinoctiale).

Bostrichus peregrinus Erichson, 1847, Archiv. Naturgesch., Jahrgang 13, **1**: 87 (Peru).

Apate punctipennis LeConte, 1858, Acad. Nat. Sci. Philadelphia, Proc. **1858**: 73 (Southwestern N. America).

Bostrichus migrator Sharp, 1885, Roy. Dublin Soc., Trans. **3**(2): 160 (Nicaragua, Hawaiian Is.).

Amphicerus (*s. str.*) *cornutus,* Lesne, 1899, Soc. Ent. France, Ann. **67**: 506, 510, figs. 105, 110-113, 115; 1938, Coleopt. Cat. **161**: 40-41.

Schistoceros cornutus, Lesne, 1910, Mus. Nat. Hist. Natur. Paris, Bull. **1910**: 185, 186.

Amphicerus cornutus, Swezey, 1954, B. P. Bishop Mus., Special Pub. **44**: 190.

Body large, elongate, cylindrical, parallel-sided. Black, shining; antenna, palpi and claws red brown, but basal one or two segments and three terminal segments of antenna darker in general.

Head clothed with yellow or golden yellow pubescence; occiput closely covered with short longitudinal ridges, glabrous; vertex coarsely granulate, rather sparsely pubescent-punctate, but anteromedian area impunctate, glabrous and somewhat depressed; frons

short, somewhat elevated on median area, very closely pubescent-punctate; clypeus separated from frons by transverse suture, coarsely and rather closely pubescent-punctate, interspaces of these punctures rugose; labrum much wider than long, strongly narrowed anteriorly, gently rounded at front corners, thickly clothed with long golden yellow setae at front border, somewhat convex and very finely and closely pubescent-punctulate on surface. Antenna 10-segmented, with three terminal segments strongly dilated, but more or less longer than wide. Pronotum slightly longer than wide, strongly rounded and not ridged at sides, gently emarginate at front border, produced forward in large and reflexed horn-like projections at each front corner, not angulate at basal corners; dorsum strongly convex, more or less clothed with fine yellow or golden yellow pubescence; anterior half of disc closely and strongly denticulate or tuberculate, these projections more developed on sides than on median part, with several at each lateral extremity more strongly developed than inner ones and arranged in longitudinal series, and foremost projection of series connected with horn-like projection at front corner; posterior half of disc and

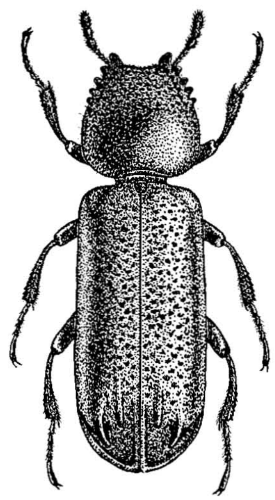


FIGURE 2.—*Amphicerus cornutus.*

lateral areas of pronotum covered with weak scale-like projections which are coarsest on anterolateral areas. Scutellum small, subquadrate, but not angulate at corners, somewhat longer than wide, gently convex and finely pubescent-punctulate on surface. Elytra nearly equal to pronotum in width, strongly elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side, coarsely, irregularly and rather closely punctured throughout; apical area strongly declined behind, somewhat depressed, more coarsely punctate. Underside and legs closely pubescent-punctate.

Male: Frons with two transversely placed, small but remarkable protuberances on middle; pronotum with strongly developed horn-like projections at front corners; elytron with two well-developed projections (inner one smaller than outer) at side of apical declivity; clothing hairs finer, more sparsely set and paler in coloration than in female.

Female: Frons without special protuberances as in male; horn-like projections at sides of front corner of pronotum much smaller than those of male; elytron somewhat convex at side of apical declivity, but without projections; clothing hairs more robust, more closely set and deeper in coloration (golden yellow or deep yellow) than in male.

Length: 10.0-15.0 mm.

DISTRIBUTION: Tropical America, Hawaiian Is., Wake Atoll.

WAKE. WAKE I.: One, Nov. 1953, C. R. Joyce; one, Mar. 1955, A. Gramolini.

Genus **Xylothrips** Lesne

Xylothrips Lesne, 1900, Soc. Ent. France, Ann. **69**: 479, 620.—Jacobson, 1913, Käfer Russ. **10**: 804, 806.—Chûjô, 1937, Fauna Nipponica X, **8**(7): 37, 58-59.—Lesne, 1938, Coleopt. Cat. **161**: 67. Genotype: *Apate flavipes* Illiger, 1801, Mag. Insect. **1**: 171, male (Africa).

Antenna 10-segmented; three terminal segments strongly dilated, each longer than broad. Pronotum broader than long, rather strongly narrowed anteriorly from a little behind middle, sharply ridged at sides of basal half, angulate and a little produced at basal corners; dorsum strongly convex, closely denticulate on anterior half, but smooth on posterior half. Scutellum small, nearly rectangular. Elytron elongate, parallel-sided, rounded posteriorly; dorsum strongly convex from side to side, but apex strongly declined behind and armed with some projections on border.

Male: Frons slightly convex, closely and sparsely clothed with short pubescence; abdomen not emarginate at apex of last visible sternite, the additional sclerite attaching at each side extending from base to near middle, glabrous and smooth.

Female: Frons and clypeus closely clothed with long golden or golden yellow setae on sides; abdomen with last visible sternite lightly reflexed and assuming an emarginate shape, lateral appendicular sclerites longer than those of male and finely but not closely pubescent.

Oriental and Australian Regions, Madagascar.

KEY TO MICRONESIAN SPECIES OF XYLOTHRIPS

1. Apical declivity of elytron distinctly ridged at lower half of lateral border and ridge completely fused into apicolateral border; sutural border of elytron markedly thickened at apex, forming a distinct globular projection; prothorax lacking distinct punctures laterally; male closely furnished with golden yellow pubescence on frons .... **flavipes**

   Apical declivity of elytron distinctly ridged as in *flavipes*, but ridge short and not connected to apicolateral border; sutural border of elytron with no distinct prominence; prothorax strongly and closely punctured laterally; male closely furnished with long pale yellow setae like a crown on frons .... **religiosus**

7. **Xylothrips flavipes** (Illiger).

Apate flavipes Illiger, 1801, Mag. Insect. **1**: 171, male (Africa).

Apate dominicana Fabricius, 1801, Syst. Eleuth. **2**: 380, female (India orientali).

Apate sinuata Stephens (*nec* Fabricius, 1792), 1830, Illustr. Brit. Ent., Mandib. **3**: 351, pl. 19, fig. 6 (England).

Apate religiosae Fairmaire (*nec* Boisduval, 1835), 1850, Rev. Mag. Zool. II, **2**: 50 (part; in trunks of *Hibiscus tiliaceus* and *Artocarpus* in Tahiti).

Bostrichus mutilatus Walker, 1858, Ann. Mag. Nat. Hist. II, **3**: 286 (Ceylon).

Bostrichus (*Xylopertha*) *iracundus* Snellen van Vollenhoven, 1869, Recherches Faune Madagascar **5**: 10, pl. 1, fig. 7 (Nossi Be).

Xylothrips flavipes, Lesne, 1900, Soc. Ent. France, Ann. **69**: 621, figs. 256, 257, 474.—Stebbing, 1914, Indian Forest Insects, 151, fig. 99.—Froggatt, 1927, Forest Insects and Timber Borers, 18, 101, pl. 3, figs. 3, 4.—Beeson and Bhatia, 1937 Indian Forest Rec., Ent., n. ser. **2**: 308, fig. 19.—Chûjô, 1937, Fauna Nipponica X, **8**(7): 60-62, 71, figs. 28, 35, 36, 47, 49.—Lesne, 1938, Coleopt. Cat. **161**: 67.—Chûjô, 1942, Mushi **14** (2): 81-82, 85 (Dugor, Kanif, Ruul-Tomil, Maki and Ruul in Yap; Saipan).

Body elongate-cylindrical, but comparatively thick and short, parallel-sided. Coloration pitchy red, strongly shining; in immature individuals yellow brown or red brown, antenna, mouthparts (except mandibles black), underside and legs, except tibiae, almost always paler than general color of body, and clypeus, apical area of elytra and tibiae usually deeper than general color.

Head with occiput clothed with very fine and short longitudinal ridges; vertex finely and closely punctured; frons more sparsely clothed with larger punctures than on vertex; clypeus almost impunctate, smooth, with middle and sides of front border lightly emarginate; labrum closely clothed with fine punctures and pale yellow pubescence, with dense long golden setae at front border. Antenna 10-segmented, three terminal segments each distinctly dilated but much longer than broad. Pronotum rather wider than long, widest a little before base and strongly narrowed anteriorly from there with gentle curvature; front corners ending in sharp and reflexed hook-like projection; front borders lightly emarginate; posterior half of lateral borders sharply ridged, angulate, a little prominent at tip of basal corner and somewhat developed inward along basal border; dorsum strongly convex, anterior half closely denticulate (denticles along lateral borders larger than those on inner area), finely punctured and sparsely yellow pubescent; anterolateral areas of pronotum extremely finely but sparsely punctulate with interspaces of punctures obtusely rugose; posterior half of disc and posterolateral areas of pronotum almost impunctate, smooth and glabrous. Scutellum minute, nearly trapezoidal, but angles not acuminate; dorsum slightly convex, glabrous and smooth. Elytron elongate, parallel-sided, rounded at posterior border; dorsum strongly convex from side to side, finely punctured, glabrous; apex strongly declined behind, somewhat depressed with exception of marginal and sutural borders, more strongly punctured than anterior area; lateral border with three projections on upper half, and lower half distinctly ridged and connected to apicolateral border; apical part of sutural border globularly thickened. Underside finely and closely punctured and yellowish pubescent; metacoxal cavities separated by a narrow but distinct sclerite; last visible abdominal sternite with narrow appendicular sclerite at side; undersides of metafemora very closely clothed with yellowish pubescence; second and third tarsal segments thickly clothed with yellow pubescence and also sparsely furnished with long yellow hairs.

Male: Frons somewhat convex, clothed with fine close golden yellow pubescence and also longer golden yellow pubescence, especially near eyes; clypeus closely clothed with short golden yellow pubescence like a transverse band (obliterated at middle), the pubescence reflexed upward.

Female: Frons very closely furnished with long golden yellow hairs in transverse arched line; clypeus very closely clothed with shorter golden yellow pubescence like a transverse band (obliterated at middle), resembling a crown of golden yellow hairs.

Length: 6.0-8.5 mm.

DISTRIBUTION: Madagascar; Oriental Region; Austro-Malayan subregion; western Micronesia.

S. MARIANA IS. SAIPAN: One, 1942, Matusita; one, Jan. 1945, Hagen; 1-2 miles east of Tanapag, one, Apr. 1945, Dybas; As Mahetog, four, Jan., May, 1945, one, at light, Sept. 1954, Dybas; As Mahetog area, one, at light, Sept. 1954, Ducoff. TINIAN: 31, Mar. 1945, Hagen; Mt. Lasso, Apr. 1946, Hadden; ridge, southeast section, 19, Mar. 1945, Dybas. GUAM: 1911, Fullaway.

PALAU. BABELTHUAP: Ollei (Oller), one, May 1953, Beardsley. PELELIU: North-central, one, at light, Aug. 1945, Ducoff; three, Aug. 1945, Dybas, ANGAUR: Feb. 1948, Dybas.

YAP. YAP: Kolonia, one, July-Aug. 1950, Goss; Ruul Distr., July-Aug. 1950, Goss.

8. **Xylothrips religiosus** (Boisduval).

Apate religiosa Boisduval, 1835, Voy. Astrolabe **2**: 460 (part; Dorei, New Guinea, Africa, Mauritius, Bourbon, East Indies).

Apate religiosae, Fairmaire, 1850, Rev. Mag. Zool. II, **2**: 50 (part; confused with *flavipes;* reported as common on trunks of *Hibiscus tiliaceus* and *Artocarpus,* in Tahiti).

Apate lifuana Montrouzier, 1861, Soc. Ent. France, Ann. IV, **1**: 267 (Lifu).

Apate destructor Montrouzier, 1885, Soc. Agric. Lyon, Ann. VII, **1**(2): 55 (San Cristobal and Woodlark, attacking many woods).

Xylopertha religiosa, Lesne, 1895, Soc. Ent. France, Bull. **1895**: 178.

Xylothrips religiosus, Lesne, 1900, Soc. Ent. France, Ann. **69**: 621, 624, figs. 32, 473, 475-477 (east to Hawaiian Is. and Marquesas).—Froggatt, 1927, Forest Insects and Timber Borers, pl. 30, fig. 3.—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26** (158): 409, 410 (Ponape); 1937, Fauna Nipponica X, **8**(7): 60, 62-63, 71, figs. 48, 50.—Lesne, 1938, Coleopt. Cat. **161**: 67.—Swezey, 1942, B. P. Bishop Mus., Bull. **172**: 162 (Machanao, Guam).—Chûjô, 1942, Mushi **14** (2): 82 (Erin, Tonoas, Truk; Lele, Kusaie; Ronkiti and Wene in Ponape).

Differs from *X. flavipes* in the following points: Coloration dark piceous, strongly shining; antenna, mouthparts (except mandibles black) and legs (except tibiae blackish brown) deep yellow; underside often dark red brown.

Pronotum closely armed with denticular protuberances on anterior half of dorsum, but protuberances feebler and smaller than those in *flavipes,* closely furnished with strong punctures on anterolateral areas with interspaces of those punctures sometimes obtusely and partly rugose, and sparsely clothed with distinct punctures on median part of posterior half of dorsum. Elytron distinctly punctured, the punctures more robust than those in *flavipes* in general; apical declivity with three projections on upper half of lateral border (projections similar to those of *flavipes*) and lower half of lateral border distinctly raised, but not connected at lower end to apicolateral border; sutural border neither especially thickened nor produced posteriorly. Abdomen with an appendicular sclerite at side of last visible sternite, sclerite much narrower than in *flavipes.*

Male: Frons and clypeus closely clothed with long pale yellow setae rather shorter and much more slender than those of female.

Female: Frons and clypeus clothed with long golden yellow setae as in female of *flavipes*.

Length: 5.0-8.5 mm.

DISTRIBUTION: Oceanic and Australian regions.

PALAU. KOROR: One, Apr. 1953, Beardsley.

CAROLINE ATOLLS. ANT ATOLL: One, Aug. 1949, Langford.

TRUK. MOEN (Wena): One, Oct. 1952, Beardsley; Mt. Tonaachau, one, Feb. 1949, Potts; Civil Administration Area, 35, Feb.-Apr. 1949, Potts. TON (Tol): Mt Unibot, 200 m., one, Dec. 1952, Gressitt.

PONAPE. Colonia, two, Apr. 1927, Uchiyama; two, Nov. 1953, Beardsley; seven, Feb.-Mar. 1948, Dybas; one, July 1949, Glassman; two, June-Sept. 1950, Adams; one, Jan. 1953, Gressitt. Mt. Temwetemwensekir, three, Jan. 1953, Gressitt. Dolen Wenik (Tolocolme), one, Feb. 1936, Ono. Temwen (Tamon), one, Feb. 1936, Ono. Madolenihm (Matalanim) Plantation, 13, June-Sept. 1950, Adams.

KUSAIE. Pukusrik, Feb. 1953, Clarke. "Hill 1010," 300 m., four, Apr. 1953, Clarke. Mutunlik (Yepan), three, 16 m., Jan. 1953, Gressitt, 54, Jan.-Mar. 1953, Clarke; "Hill 541," 28, Mar.-Apr. 1953, Clarke. Malem River, 90 m., three, Apr. 1953, Clarke. Mwot, 11, Apr. 1953, Clarke.

Genus **Xylopsocus** Lesne

Xylopsocus Lesne, 1900, Soc. Ent. France, Ann. **69**: 479, 627.—Jacobson, 1913, Käfer Russ. **10**: 804, 806.—Lesne, 1924, Encycl. Ent. **3**: 209, 215.—Chûjô, 1937, Fauna Nipponica X, **8**(7): 37, 63-64.—Lesne, 1938, Coleopt. Cat. **161**: 68.— Genotype: *Apate capucina* Fabricius, 1781, Species Insectorum **1**: 62 (Coromandel).

Antenna nine- or 10-segmented; three terminal segments distinctly dilated, first two of these segments each wider than long, but apical one longer than wide, sometimes these three segments with a pair of small areas of very fine pubescence on both sides. Pronotum broader than long in general, widest at a little before base and strongly narrowed anteriorly from there; dorsum strongly convex, with anterior half closely denticulate and posterior half punctured; lateral borders sharply ridged at posterior half of pronotum, ridges strongly angulate at basal corners and then somewhat developed inward along basal border. Scutellum small, quadrate. Elytron elongate, parallel-sided or rather widened and rounded posteriorly; dorsum strongly convex from side to side, punctured, with apical area strongly declined behind and frequently more or less dentate at side, and apex of sutural border somewhat prominent.

Male: Abdomen rounded at apex of last visible sternite.

Female: Abdomen emarginate at apex of last visible sternite.

Oriental, Australian, Nearctic, and Ethiopian Regions; Japan.

KEY TO MICRONESIAN SPECIES OF XYLOPSOCUS

1. Pronotum nearly reticulate-foveolate on anterior half of side, distinctly punctured on posterior half of side and also on basodorsal area, the basolateral and basodorsal areas glabrous. Elytron with interspaces of punctures more or less convex, often granulate or tuberculate; apical declivity with two

obtuse projections on upper half of lateral border and side of projection somewhat emarginate .... **capucinus**

Pronotum smooth and impunctate on basolateral areas, sparsely pubescent and finely but very sparsely punctured on anterolateral areas. Elytron with interspaces of punctures mostly flat, but somewhat rugose on posterolateral area; apical declivity without any projection and emargination on lateral border .... **castanopterus**

9. Xylopsocus capucinus (Fabricius).

Apate capucina Fabricius, 1781, Species Insectorum **1**: 62 (Coromandel).

Bostrichus eremitus Olivier, 1790, Encycl. Méth. **5**: 110, pl. 2, fig. 11 (Coromandel).

Synodendron capucinum, Fabricius, 1792, Ent. Syst. **1** (2): 359.

Apate marginata Fabricius, 1801, Syst. Eleuth. **2**: 382 (East Indies).

Enneadesmus nicobaricus Redtenbacher, 1868, Reise Novara **2**(1): 114 (Nicobar Is.).

Xylopsocus capucinus, Lesne, 1900, Soc. Ent. France, Ann. **69**: 628, 631, figs. 478, 481, 482; 1924, Encycl. Ent. **3**: 216, 217, fig. 133.— P. da Foncera, 1934, Archiv. Inst. Biol. **5**: 289 (Sao Paulo).—Swabey, 1935, Forest. Dept. Trinidad, Leaflet 6.—Chûjô, 1936, Nat. Hist. Soc. Formosa, Trans. **26**(158): 409, 410 (Truk); 1937, Fauna Nipponica X, **8**(7): 64, 66-68, 71, figs. 52, 54.—Lesne, 1938, Coleopt. Cat. **161**: 68.—Swezey, 1942, B. P. Bishop Mus., Bull. **172**: 162-163 (Pt. Ritidian, Guam).

Body elongate, cylindrical, nearly parallel-sided. Coloration deep yellow brown, somewhat lustrous; head (mandibles black, antenna and mouthparts deep yellow brown or red brown), pronotum, scutellum, and lateral and apical areas of elytra pitchy black; underside in general paler than dorsum, sometimes dorsum wholly black.

Head with occiput closely clothed with short and fine longitudinal ridges; vertex and frons closely armed with minute granules; clypeus distinctly delimited from frons by a transverse furrow, finely and closely punctured, tri-emarginate at front border; labrum finely and closely punctured and pale yellow pubescent. Antenna nine-segmented, with three terminal segments strongly dilated, the first two of these distinctly broader than long, but apical one longer than broad. Pronotum somewhat wider than long, widest at a little before base, strongly narrowed anteriorly from widest part; front angles armed with reflexed hook-like projections; front border gently emarginate, but nearly straight at middle; posterolateral border sharply ridged, the ridge strongly angulate at tip of basal corner and then a little developed inward along basal border; dorsum very strongly convex, anteromedian area closely armed with denticular prominences (those along lateral borders of pronotum strongly reflexed and much larger than others) and fine pubescence, the other areas neither denticulate nor pubescent; anterior half of side closely covered with very shallow foveae and low subreticular ridges and posterior half of pronotum with many larger and smaller irregular punctures. Scutellum very small, nearly trapezoidal in outline, rounded at corners; dorsum slightly convex, nearly impunctate and smooth. Elytron elongate, slightly widened posteriorly, rounded at posterior border; dorsum distinctly punctured, the punctures becoming stronger posteriorly and interspaces more or less convex, especially strongly convex on posterior area, like scaly elevations or granular prominences; humerus somewhat elevated, finely but not closely punctulate; apex strongly inclined behind, somewhat depressed (except marginal and sutural borders) and coarsely punctured, with two or three obtuse jags on upper half of lateral border and sutural

border somewhat produced posteriorly at apex. Underside and legs thickly clothed with fine, silky pubescence.

Sexual differences are as in the description of the generic characters.

Length: 3.5-4.5 mm.

DISTRIBUTION: Ethiopian, Neotropical, and Australian Regions; Oceania.

S. MARIANA IS. SAIPAN: Six, July 1945, Hagen; As Mahetog area, four, Oct.-Nov. 1944, Dybas; one, Jan. 1945, Dybas; near Garapan, one, Jan. 1945, Dybas; hills east of Garapan, one, Jan. 1945, Dybas; Papago area, one, Jan. 1945, Dybas. TINIAN: One, Aug. 1940, Matusita; two, Mar., May 1945, Hagen; Mt. Lasso, northwest slope, one, Mar. 1945, Dybas; 2 km. northeast of Tinian Harbor, one, Apr. 1945, Dybas. AGIGUAN: Two, May, July 1952, Kondo. GUAM: Pt. Oca, near Agana, four, May-June 1945, G. Bohart and Gressitt; southeast coast, one, May 1945, G. Bohart and Gressitt.

PALAU. NGERGOI (Garakayo): One, Aug. 1945, Dybas. PELELIU: One, Aug. 1945, Hagen; one, Sept. 1946, Baker; north-central part, one, July 1945, Dybas; east coast, one, Aug. 1945, Dybas.

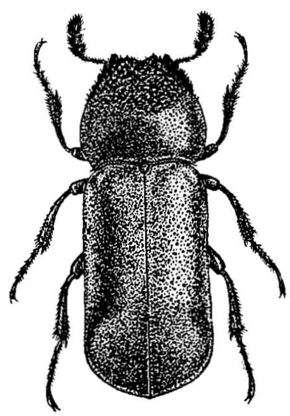


FIGURE 3.—*Xylopsocus castanopterus.*

10. Xylopsocus castanopterus (Fairmaire). (Figure 3.)

Apate castanoptera Fairmaire, 1850, Rev. Mag. Zool. II, **2**: 50 (Tahiti).

Apate affinis Brancsik, 1893, Jahrb. Naturwiss. Ver. Trencsin **15**: 235 (Nossi Be).

Xylopsocus castanopterus, Lesne, 1900, Soc. Ent. France, Ann. **69**: 629, 635; 1926, Treubia **7**: 119; 1938, Coleopt. Cat. **161**: 68.

Body elongate, cylindrical, parallel-sided. Coloration castaneous or piceous, strongly shining; basal half of elytra, lateral and apical areas of abdomen, and legs more or less reddish in general, but femora often darker and tarsi paler; head, anterior area of pronotum and breast more blackish; antenna and mouthparts (except mandibles, which are piceous at base and black at apex) pale to dark yellow brown.

Head with occiput finely, closely and longitudinally strigose; vertex and frons finely and closely granulate throughout, not distinctly separated, finely pubescent on anterior and lateral areas of frons; clypeus transverse, shallowly depressed at middle of base, finely and closely pubescent-punctate on surface, rather strongly foveolate on sides of anterior area, gently emarginate at middle of front border; labrum transverse, rounded and thickly pubescent at lateral and front borders, distinctly convex and finely pubescent-punctate on surface. Antenna nine-segmented; three terminal segments strongly dilated, first two of these much wider than long, but apical one longer than wide. Pronotum rather broader than long, widest a little before base; front border slightly arched inward, lateral borders strongly rounded and sharply ridged, the ridges well separated from front border at each end, basal corners rather larger than right angles with distinct tooth-like projections at tips, basal border distinctly edged at extremities; dorsum strongly convex, with a shallow triangular depression on anteromedian area, rather sparsely pubescent-punctate with exception of nearly impunctate and glabrous posterolateral area; anterior half of dorsum (except lateral area) distinctly and rather closely denticulate, denticles more robust on anterior than on posterior in general and several large and reflexed denticles arranged in an oblique file at each side, and among these file denticles the anterior ones larger than posterior and the foremost (much larger than others) situated on front corner of pronotum; sides and post-median area of dorsum distinctly and rather sparsely punctured. Scutellum small, trapezoidal, with posterior corners not acuminate, finely but sparingly punctulate. Elytron elongate, subparallel-sided, slightly widened and rounded posteriorly; distinctly and closely punctured with interspaces extremely finely but not closely punctulate (under high power lens) and distinctly rugose on posterolateral areas; humerus somewhat elevated, with only microscopic fine punctures; apex strongly inclined behind with upper half of declivity not ridged, but lower border distinctly ridged together with sutural border in this area, and surface closely granulate throughout, granules with fine punctures at tips. Underside and legs closely clothed with fine and silky pubescence.

Length: 3.5-4.0 mm.

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